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RECENT LITERATURE.

On the Classification of the Myxosporidia, a group of protozoan parasites infesting fishes. (Art. 10, Bull. U. S. Fish Commission for 1891, pp. 407–420. Washington, D. C., 1893). By R. R. Gurley.

This paper is a communication preliminary to a more extensive report at present in manuscript. Several new terms are introduced, a new classification is proposed, three new species described and twenty species mentioned by other authors, but not named, are given binomial names. All of these species will be figured in the final report.

The new terms are as follows: *pansporoblast,* the plasma-sphere from which the sporoblasts arise; *sporoplasm,* the protoplasm of the spore; *capsular index,* the ratio of the length of the capsule to the antero-posterior diameter of the shell-cavity; *pericornual nuclei,* the two nuclei (" granules," " globules ") at the antero-lateral angles of the sporoplasm or on the posterior extremities of the capsule.

Gurley's classification is based upon the symmetry of the spores as the most important taxonomic criterion and differs from Thélohan's classification in several particulars. Two orders with five families are recognized. One new genus (*Pleistophora*) is proposed; *Sphærospora* Th. and *Myxosoma* Th. are fused into a subgenus *Sphærospora* of the genus *Chloromyxum* Ming. The following key, based upon Gurley's tables and descriptions will show the plan of his classification.

Subclass *Myxosporidia ;* pansporoblast produces—

I. Many (at least 8) minute spores, lacking distinct symmetry and possessing but one capsule Ord. *Cryptocystes.*
  A. Spores numerous, inconstant; pansporoblast membrane $\frac{1}{m}$
    a. Not subpersistent; myxosporidium present Gen. *Glugea Th.*
    b. Subpersistent; myxosporidium absent Gen. nov. *Pleistophora.*
  B. Spores constant (8); pansporoblast membrane subpersistent; myxsoporidium absent Gen. *Thelohania* Hen.

II. Few (2 at most) rather large spores with distinct symmetry and two or more capsules Ord. *Phænocystes.*
Spores symmetrical bilaterally; antero-posterior symmetry $\frac{1}{m}$
  A. Present Gen. *Cystodiscus* Lutz.

B. Absent; capsules in—
  a. Two groups, right and left wings; not bivalve — Gen. *Myxidium* Büt.
  b. One group, at anterior end; bivalve; capsules—
    α. Four — Gen. *Chloromyxum* Min.
    β. Two; inclination of plane of junction of valves to longitudinal plane
      *0°; vacuole present — Gen. *Myxobolus* Büt
      **90°; vacuole absent; sporoplasm unilateral — Gen. *Ceratomyxa* Th.

The family *Glugeidœ* includes the genera *Glugea, Pleistophora* and *Thelohania; Chloromyxidœ* includes *Chloromyxum* and *Ceratomyxum,* while the families *Myxidiidœ, Myxobolidœ* and *Cystodiscidœ,* each include but one genus.

As new species are described :—

1. *Myxobolus globosus* from branchial lamellæ of *Erimyzon sucetta;* globose, 7–8μ long by 6μ broad by 5μ thick; capsular index somewhat more than 0.50.

2. *M. transovalis* under scales of *Phoxinus funduloides;* 6–7μ long by 8μ broad; cap. ind. 0.50.

3. *M. macrurus* subcutaneous tissue of *Hybognathus nuchalis*; 10–11μ by 6–8μ by 4μ; tail 30–40μ; for further description see original.

The following species have been given binomial names :—

1. *Cystodiscus ? diploxys* from *Tortrix viridana,* vid. Balbiani, 1867.
2. *Myxobolus unicapsulatus* from *Labeo niloticus,* vid. Müller, 1841.
3. *M. inequalis* from *Pimelodus clarias,* vid. Müller, 1841.
4. *M. oblongus* from *Erimyzon sucetta,* vid. Müller, 1841.
5. *M. bicostatus* from branchiæ of *Tinca tinca,* vid. Bütschli, 1882.
6. *M. lintonii* from *Cyprinodon variegatus,* vid. Linton, 1891.
7. *M. obesus* from *Alburnus alburnus,* vid. Balbiani, 1883.
8. *M. cycloides* from *Leuciscus rutilus,* vid. Müller, 1841.
9. *M. spheralis* from *Coregonus fera,* vid. Claparède, 1874.
10. *M. perlatus* from *Gymnocephalus cernua,* vid. Balbiani, 1883.
11. *M. ? zschokkei* from *Coregonus fera,* vid. Zschokke, 1884.
12. *M. monurus* from *Aphododerus sayanus,* vid. Ryder, 1880.
13. *M. strongylurus* from *Synodontis schal,* vid. Müller, 1841.

14. *M. kolesnikovi* from *Coregonus fera,* vid. Kolesnikoff, 1866.
15. *M. linearis* from *Pseudoplatystoma fasciatum,* vid. Müller, 1841.
16. *M. schizurus* from *Esox lucius,* vid. Müller, 1841.
17. *M. creplinii* from *Gymnocephalus cernua,* vid. Creplin, 1842.
18. *M. diplurus* from *Lota lota,* vid. Bütschli, 1882.
19. *Chloromyxum mucronatum* from *Lota lota,* vid. Müller, 1854.
20. *C. incisum* from *Raja batis,* vid. Müller, 1851.

C. W. STILES.

Stiles' and Hassall's Cestodes.—The publication by Dr. Stiles of several preliminaries, notably one in the *Centralblatt für Bacteriologie und Parasitenkunde,* 1893, No. 14–15, has led helminthologists to look with interest for the appearance of his revision of the Cestodes which has just been issued.[1] The letter of transmittal by the Chief of the Bureau calls attention to the importance of accurate knowledge as to specific limits, since "every separate species has a separate source of infection," and remarks truly that this paper "covers the results of a more thorough and extensive study of the tape-worms of cattle and sheep than has ever before been attempted."

Both authors are responsible for the bibliography and for the work on new species, Dr. Stiles, however, alone for the studies on species already known. The work is based on a careful and exhaustive study of internal anatomy, not only of our own forms, but also of the foreign species. In almost every instance the original types have been consulted with the result that now for the first time the character and limits of some of Rudolphi's species are known. In this connection the importance of preserving the type specimens cannot be too strongly emphasized. Dr. Stiles' experiments have shown that different methods of preservation result in such differences in external appearance and proportions, that no dependence can be placed on these data for specific determinations, the only safe generic and specific determinations are those based on internal anatomy. Careful study along this line has yielded unlooked for results. The topographical anatomy of the excretory system was shown in the preliminary already cited to be of great value in separating the genera in the family of the Tæniidæ and it forms the basis of the division employed in the present paper.

In the adult tape-worms of sheep and cattle, Dr. Stiles recognizes four genera:

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[1] A Revision of the adult Cestodes of Cattle, Sheep, and allied animals. By C. W. Stiles, Ph. D., and Albert Hassall, M. R. C. V. S. U. S. Dept. of Agr., Bureau of Animal Industry, Bulletin No. 4, Washington, 1893; 103 pp., 16 plates.